Space Weather Forecast

Issued on Tuesday, 15 March 2022 at 12:05 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of M-class flares. Chance of Active fluence by Days 2-4 (16-18 Mar).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low with several Common class flares from a large and fairly complex region near north centre disc. There are also three other sunspot regions on the visible disc. There is a large but stable region which will be rotating off the Earth-side of the disc towards the end of Day 1 (15 Mar). The remaining two regions are both small and simple. There is a slow and weak Coronal Mass Ejection (CME) observed on 13 March which may give a glancing blow at Earth on the 17 Mar, but with low confidence.

Solar Wind / Geomagnetic Activity: Solar wind speeds have been mostly slightly elevated through the period. The Interplanetary Magnetic Field was mostly moderate. The important north-south component was Strong at first becoming generally Weak. Geomagnetic activity has been Quiet.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be Low, with a chance of Moderate-class flares. The risk of flares mainly comes from the large region near north centre disc.

Solar Wind / Geomagnetic Activity: There is a risk of further periods of southward oriented Bz, and is currently weakly negative. There is also a slight chance of a glancing blow from a weak CME on Day 3 (17 Mar). No coronal hole effects are currently expected during this period. Geomagnetic activity is likely to be predominantly Quiet, with the greatest chance of any significant increases in activity if we do see the weak CME on Day 3 (17 Mar).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to be at background levels with no solar radiation storms, although there is a slight chance of an increase in response to any larger flares that may occur.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	25	25	25	25
Very Active	R3 to R5 X	No	2	2	2	2

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	2	2	2	2
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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